

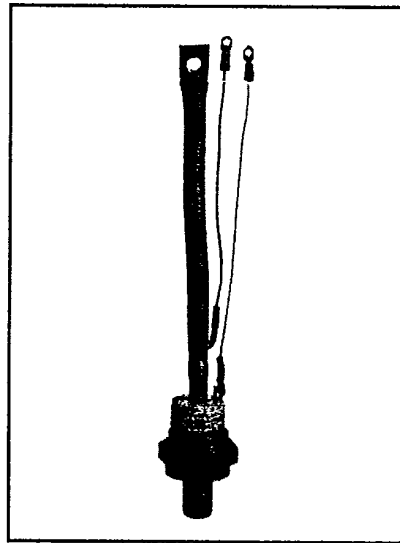
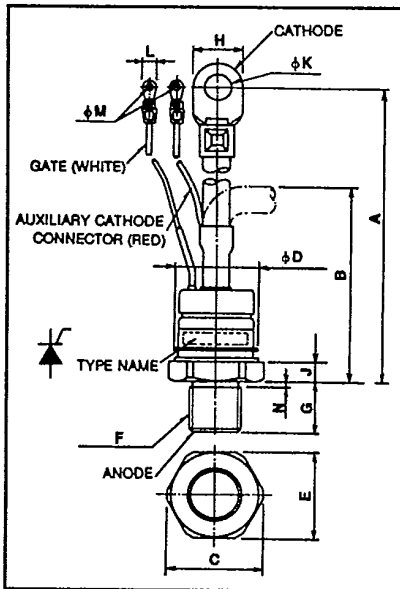


T-25-19

**CR400EL**

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272  
 Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

**Phase Control SCR**  
**400 Amperes Avg**  
**200-1200 Volts**



**CR400EL**  
**Phase Control SCR**  
 400 Amperes/200-1200 Volts

**CR400EL**  
**Outline Drawing**

Dimensions	Inches	Metric
A	9.06 ± .30	230 ± 8
B	4.53 Max	115 Max
C	1.77	45
φD	1.614 Max	41 Max
E	1.62	41
F	M24	M24 × 1.5
G	.95	24
H	.87	22
J	.43	11
φK	.413	10.5
L	.32	8
φM	.173	4.4
N	.13	3.3

**Description**

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, compression bonded encapsulated (CBE) devices employing the field-proven amplifying (di/namic) gate.

**Features:**

- Low On-State Voltage
- High di/dt
- High dv/dt
- Hermetic Packaging
- Excellent Surge and I<sup>2</sup>t Ratings

**Applications:**

- Power Supplies
- Battery Chargers
- Motor Control
- Light Dimmers
- VAR Generators

**Ordering Information**

Example: Select the complete eight or nine digit part number you desire from the table – i.e. CR400EL-12 is a 600 Volt, 400 Ampere Phase Control SCR.

Type	Voltage		Current
	V <sub>ORM</sub> V <sub>RRM</sub>	Code	
CR400EL	200	-4	400
	300	-6	
	400	-8	
	500	-10	
	600	-12	
	800	-16	
	1000	-20	
1200	-24		



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### Absolute Maximum Ratings

	Symbol	CR400EL	Units
RMS On-State Current	$I_{T(RMS)}$	630	Amperes
Average On-State Current	$I_{T(av)}$	400	Amperes
Peak One-Cycle Surge (Non Repetitive) On-State Current (60Hz)	$I_{TSM}$	8000	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	$I_{TSM}$	7300	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	500	Amperes/ $\mu$ s
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	200	Amperes/ $\mu$ s
$I^2t$ (for Fusing), one cycle at 60Hz	$I^2t$	$2.7 \times 10^6$	A <sup>2</sup> sec
Peak Gate Power Dissipation	$P_{GM}$	10	Watts
Average Gate Power Dissipation	$P_{G(av)}$	3	Watts
Storage Temperature	$T_{STG}$	-40 to 150	°C
Operating Temperature	$T_J$	-40 to 125	°C
Mounting Torque <sup>ⓐ</sup>		390 to 520	In.-lb.
Mounting Torque <sup>ⓐ</sup>		450 to 600	kg-cm

### Electrical and Thermal Characteristics

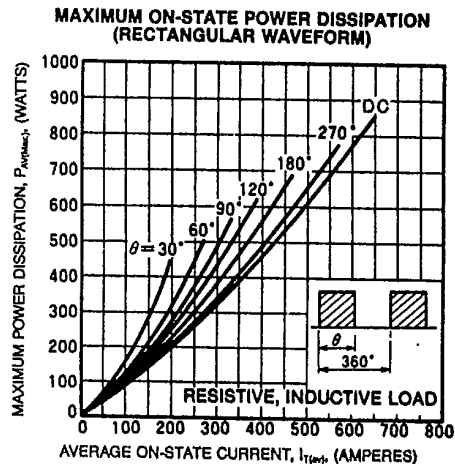
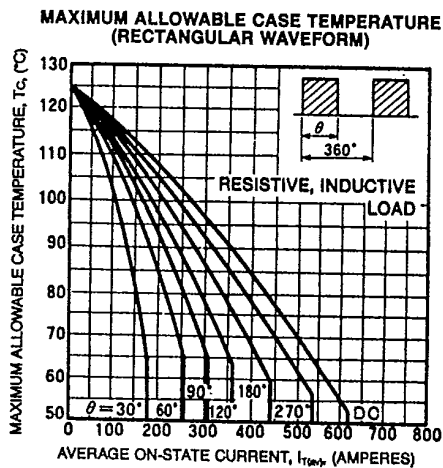
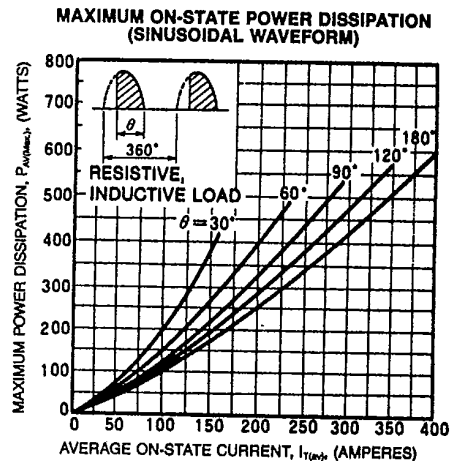
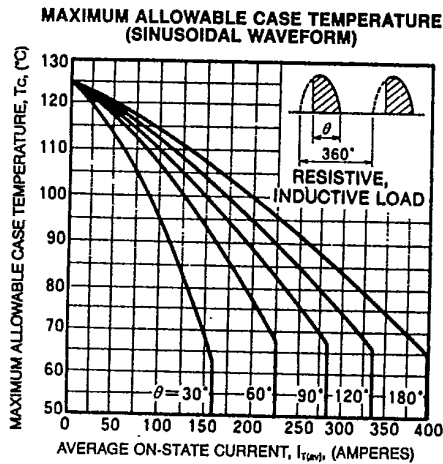
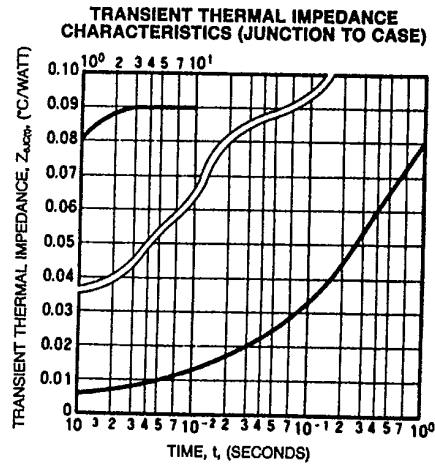
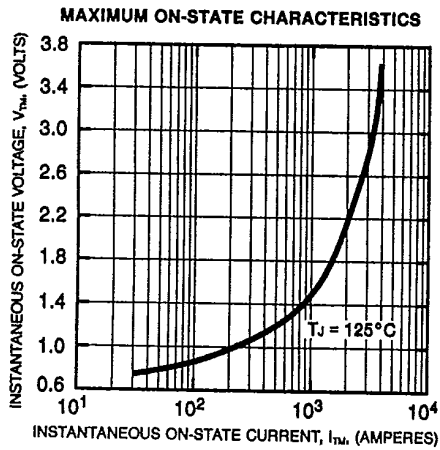
Characteristics	Symbol	Test Conditions	CR400EL	Units
<b>Voltage—Blocking State Maximums</b>				
Forward Leakage, Peak	$I_{DRM}$	$T_J = 125^\circ\text{C}$ , $V_{DRM}$ applied	30	mA
Reverse Leakage, Peak	$I_{RRM}$	$T_J = 125^\circ\text{C}$ , $V_{RRM}$ applied	30	mA
<b>Current—Conducting State Maximums</b>				
Peak On-State Voltage	$V_{TM}$	$T_J = 125^\circ\text{C}$ , $I_{TM} = 1250\text{A}$	1.70	Volts
<b>Switching</b>				
Min. Critical dv/dt exponential to $V_{DRM}$	dv/dt	$T_J = 125^\circ\text{C}$ , $V_D = 1/2V_{DRM}$	200	V/ $\mu$ sec
<b>Thermal</b>				
Maximum Thermal Resistance <sup>ⓐ</sup>				
Junction to Case	$R_{\theta JC}$		.09	°C/Watt
Case to Sink, Lubricated	$R_{\theta CS}$		.04	°C/Watt
<b>Gate—Maximum Parameters</b>				
Gate Current to Trigger	$I_{GT}$	$T_J = 25^\circ\text{C}$ , $V_D = 6\text{V}$ , $R_L = 2\Omega$	200	mA
Gate Voltage to Trigger	$V_{GT}$	$T_J = 25^\circ\text{C}$ , $V_D = 6\text{V}$ , $R_L = 2\Omega$	2.5	Volts
Non-Triggering Gate Voltage	$V_{GDM}$	$T_J = 125^\circ\text{C}$ , $V_D = 1/2V_{DRM}$	.20	Volts
Peak Forward Gate Current	$I_{GTM}$		4.0	Amperes
Peak Reverse Gate Voltage	$V_{GRM}$		4.0	Volts

<sup>ⓐ</sup> Consult recommended mounting procedures.



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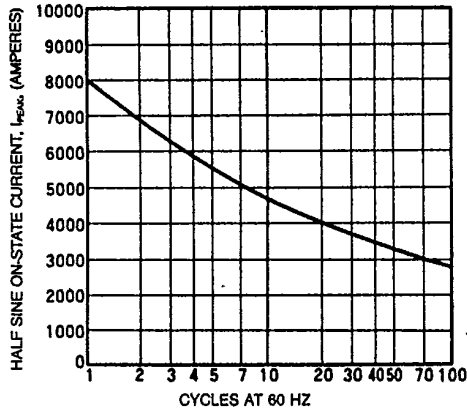


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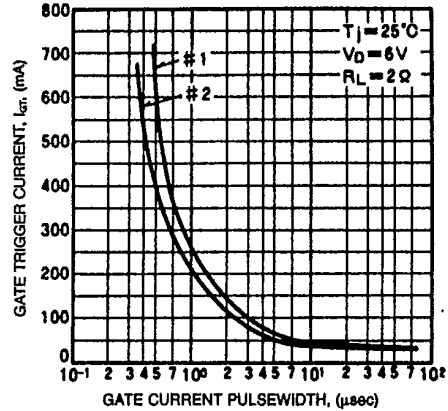
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MAXIMUM ALLOWABLE SURGE ON-STATE CURRENT (NON-REPETITIVE)



GATE TRIGGER CURRENT VS. PULSEWIDTH (TYPICAL)



GATE CHARACTERISTICS

